PEACE/WILLISTON
FISH & WILDLIFE
COMPENSATION
PROGRAM

BC hydro

BRITISH
COLUMBIA

A Reconnaissance Survey Of Robinson Lake

D. A. Jesson
1989

PWFWCP Report No. 93

The Peace/Williston Fish & Wildlife Compensation Program is a cooperative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave. 3rd Floor, Prince George B.C. V2L 3H9

Website: *www.bchydro.bc.ca/environment/initiatives/pwcp/*

This report has been approved by the Peace/Williston Fish and Wildlife Compensation Program Fish Technical Committee.

Citation: D. A. Jesson. 1989. A reconnaissance survey of Robinson Lake. Peace/Williston Fish and Wildlife Compensation Program, Report No. 93. 18pp plus appendices.

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A RECONNAISSANCE SURVEY OF

ROBINSON LAKE

WATERSHED:	PARSNIP RIVER
DATE OF SURVEY:	JUNE 18. 1989
FIELD CREW LEADER:	D.A. JESSON
FIELD ASSISTANT:	M.G. LABACH
REPORT PREPARED BY:	D.A. JESSON

WILLISTON FISHERIES PROJECT

B. C. HYDRO

ENVIRONMENTAL RESOURCES

and

MINISTRY OF ENVIRONMENT

RECREATIONAL FISHERIES BRANCH

RELEASED BY: _____

D.H.G. Ableson, Regional Fisheries Biologist

LAKE: ROBINSON **SYSTEM NAME: ROBINSON C.**

A.S.A.P. REFERENCE NO.: **SYSTEM NO: 25-0400-060-100**

DATA ON FILE FOR THIS SURVEY

Location	X	Dissolved O2/Temp. Profiles	X
Physical Data	X	Netting Record	X
Bench Mark	X	Lake Catch Summary	X
Terrain Features	X	Individual Fish Data	X
Access	X	Fish Preserved	–
Resorts and Campsites	X	Stomach Analysis	X
Other Developments	X	Scale Reading	X
Obstructions and Pollutions	X	Location of Inventory Sites	X
Special Restrictions	X	Photograph Directory	X
Aquatic Plants	X	Appendices:	
Wildlife Observations	X	A: Water Chemistry Analysis	X
Miscellaneous Comments	X	B: Tributary Stream Data	X
Lake Drainage	X	Bathymetric Map Reduction	X
Fisheries Management Comments	X	Bathymetric Map	X
History of Previous Surveys	X		
Water Chemistry Summary	X		

LOCATION

Location:	36 km southwest of MacKenzie		
Elevation:	1029 m +/-		
Latitude/Longitude:	55°03'15":123°25'37"	U.T.M.:	10.4726.61006
Management Unit:	7-29	N.T.S. Map No.:	930/3

Drainage: Robinson C. –> Philip C. –> Nation R. –> Williston L. (Parsnip Reach) –> Peace R.

PHYSICAL DATA

Lake Drainage Area:	- km^2	Volume:	507,000 m^3
Water Surface Area:	156,000 m^2	Flushing Rate:	
Area above 6 m contour:	130,000 m^2	Perimeter of Islands:	- m
Shoreline Perimeter:	2,630 m	Number of Islands:	0
Maximum Depth:	7.8 m	Mean Depth:	3.2m
Filterable Residue (TDS):	60 mg/l	Secchi Reading:	4.15 m

Sounding Device: Lowrance X-15 Elevation Source: Contour interpolation

BENCHMARK

(Iron spike, centre of red circle) located 2.0 m above present water level in a 29 cm diameter balsam fir tree, located on north shore of lake, 22 m NW of access location, 1 m from the water's edge.

High water mark: 0.2 m above water level at time of survey.

Lake: **ROBINSON**

TERRAIN FEATURES

Immediate Shoreline:

Shoreline slope around the lake ranges from a gently sloping south shore (with a 200-300 m hill approximately 700 m from the lake) to a steep north shore. The west and east ends of the lake are marsh. Lake bottom drop off from shore echoes the shoreline slope by dropping off quickly along the north shore, moderately along the south shore and gently along the west and east shores. Shoreline access is limited to the present access point due to the dense timber to the water's edge (north shore) or sedge grass marsh (remaining shores). Boating access to the shoreline is hampered by a fringe of sedge grass around the entire lake perimeter ranging from 1 m in width along the north shore to 20 m in width at the west and east ends of the lake. The occasional deadfall and organic shoal (southeast end) offer additional hazards.

Surrounding Country:

Robinson is a headwater lake confined between two mountain ridges. Forest cover is complete and appears to be mature first growth, except for logged patches in secondary succession on the south hillside. The forest type is predominantly coniferous consisting of spruce and Lodgepole pine. Deciduous species include poplar and alder.

Robinson Lake is situated within the sub-boreal spruce biogeoclimatic zone.

Lake: ROBINSON

ACCESS

Directions:

From the corner of Mackenzie Boulevard and Centennial Drive in Mackenzie, drive 29.1 km south on Mackenzie Boulevard/Highway 39. Turn right onto Highway 97 south and travel 3.0 km. Turn right and proceed north on Finlay Forest Service Road. At 19.1 km turn left onto the Finlay Philip Forest Service Road. Travel 23.0 km and turn left onto the lake access road. Drive 0.1 km to the lake. Total distance by vehicle from Mackenzie to Robinson Lake is 74.3 km.

Road Type and Conditions:

Highway 39 and Highway 97 are good, 2 lane, paved highways.
Finlay Forest Service Road is a fair to good, 2 lane, gravel logging road.
Finlay Philip Forest Service Road is a good, 2 lane, gravel logging road.
The lake access road was upgraded in September 1989 by Ministry of Forests and is a steep, single lane, gravel road with switch- backs. The road permits access to two wheel drive vehicles but discourages trailers and motorhomes.

Restrictions:

No restrictions were noted.

RESORTS AND CAMPSITES

In September 1989, the Mackenzie Forest District upgraded the previously crude campsite at the lake, to one that now includes 4 campsites, 4 picnic tables and outhouses.

OTHER DEVELOPMENTS

None.

Lake: **ROBINSON**

OBSTRUCTIONS AND POLLUTIONS

Some litter (cans, bottles and paper) is scattered around the access point to the lake.

A beaver dam on the outlet at the lake is an obstruction to upstream fish passage.

SPECIAL RESTRICTIONS

No special restrictions were noted.

AQUATIC PLANTS

Aquatic plants are abundant and distributed mainly in the shallows and the lake shore perimeter. Plants were identified in the field. None were collected.

Sphagnum SP. sedge grass
Potamogeton sp.
Equisetum fluviatile

WILDLIFE OBSERVATIONS

One beaver lodge was sighted.

MISCELLANEOUS COMMENTS

Lake is approximately an 1.5 hour drive from Mackenzie. Unidentified coarse fish observed swimming below beaver dam. Tadpoles were present in the shallows near the access point.

Bathymetric map: The outline for this lake is from an enlargement of aerial photograph BC 7258 No. 094, flown June 17, 1970.

Lake: **ROBINSON**

LAKE DRAINAGE

General:

Robinson Lake is a headwater lake with no inlets and one outlet. The outlet, Robinson Creek, drains west approximately 11 km to its confluence with Philip C., a tributary to the Nation R..

Major Systems:

There are no major systems.

Minor Systems:

Robinson Creek - outlet

This small outlet creek flows west with a low gradient (<1%). The outlet is blocked at the lake by an overgrown beaver dam, 1.0 m high by 30 m long, which is an obstruction to fish passage. Below the beaver dam the outlet has a marsh-like character with an organic bottom, offering no salmonid spawning. Additional beaver dams are believed to occur immediately downstream, however, this was not investigated.

At approximately 4.0 km downstream from the lake (where 3000 Road bridge crosses Robinson C.) the average wetted width is 3.5 m and the average water depth is 35 cm. Bed material is 70% gravel (55% small and 15% large), however, gradient is low (near zero). Spawning at the site is poor due to the low gradient and high percentage of fines (25%). Rearing is good due to an abundance of cover (some stable L.O.D., undercut banks, instream grasses and overhang). One rainbow trout fry was observed at the site.

Other than possible shore spawning, the outlet is believed to provide the rainbow trout recruitment for the lake.

Inlets

No inlets were found. A creek is present approximately 200 m east of the marsh at the east end of the lake. The east flowing creek has no connection to Robinson Lake, and is believed to be a tributary to Reed Creek (NTS map 93-0/3 edition 3).

Lake: **ROBINSON**

FISHERIES MANAGEMENT COMMENTS

Robinson Lake has a large population of stunted rainbow trout. One net set of six hours duration yielded 42 rainbow with an average fork length of 206 mm and an average weight of 103 grams. It is recommended Robinson Lake have special regulations imposed in order to allow anglers to harvest more trout. Hopefully, with time, a reduction in population will see an increase in fish size if the current food base of Gammarus. plankton and terrestrial insects remain constant. One other possible solution to reduce the trout population is to trapnet the lake. The trapped fish can be stocked into another lake with known outlet spawning and a problem with juvenile trout predation by northern Squawfish (i.e. Lions Lake near Mackenzie).

HISTORY OF PREVIOUS SURVEYS

Lake Surveys:

No previous surveys known.

Other Related Surveys:

None known.

Lake: ROBINSON

WATER CHEMISTRY SUMMARY Limnology Station No. 1

Field Conditions:

Date:	June 18, 1989		
Time:	1200 hrs	Air Temperature:	14°C
Wind Velocity:	10-30 km/hr	Wind Direction:	northwest
Cloud Cover:	3/10 O.C.	Surface Condition:	light to heavy ripple
Secchi Disc:	4.15 m	Water Colour:	tannic (tea colour)

Method(s) Used:

Dissolved Oxygen:	YSI model 58 oxygen/temperature meter
Water Temperature:	YSI model 58 oxygen/temperature meter
Air Temperature:	Hand-held alcohol thermometer
pH (field):	Hach colour comparator
H2S (field):	Hach H2S field test kit
Laboratory Used:	Zenon Environmental Inc. B. C. Laboratory Services
Water Sampler:	Verticle Alpha Water Bottle (Van dorn)
Substrate Sampler:	Substrate sample not taken

Water Sample Chemistry: SEAM Site No.: Not determined.

	Sampling Depths	
	Surface (O m)	Lower (7.0 m)
pH (field)	6.95	6.5
pH (lab)	7.2	6.8
Specific Conductance (lab)	44 umhos/cm	45 umhos/cm
Filterable Residue 105°C (lab)	60 mg/l	36 mg/l
H^2S (field)	- mg/l	O mg/l

Bottom Depth:	7.5 m
Substrate Sample Depth:	- m

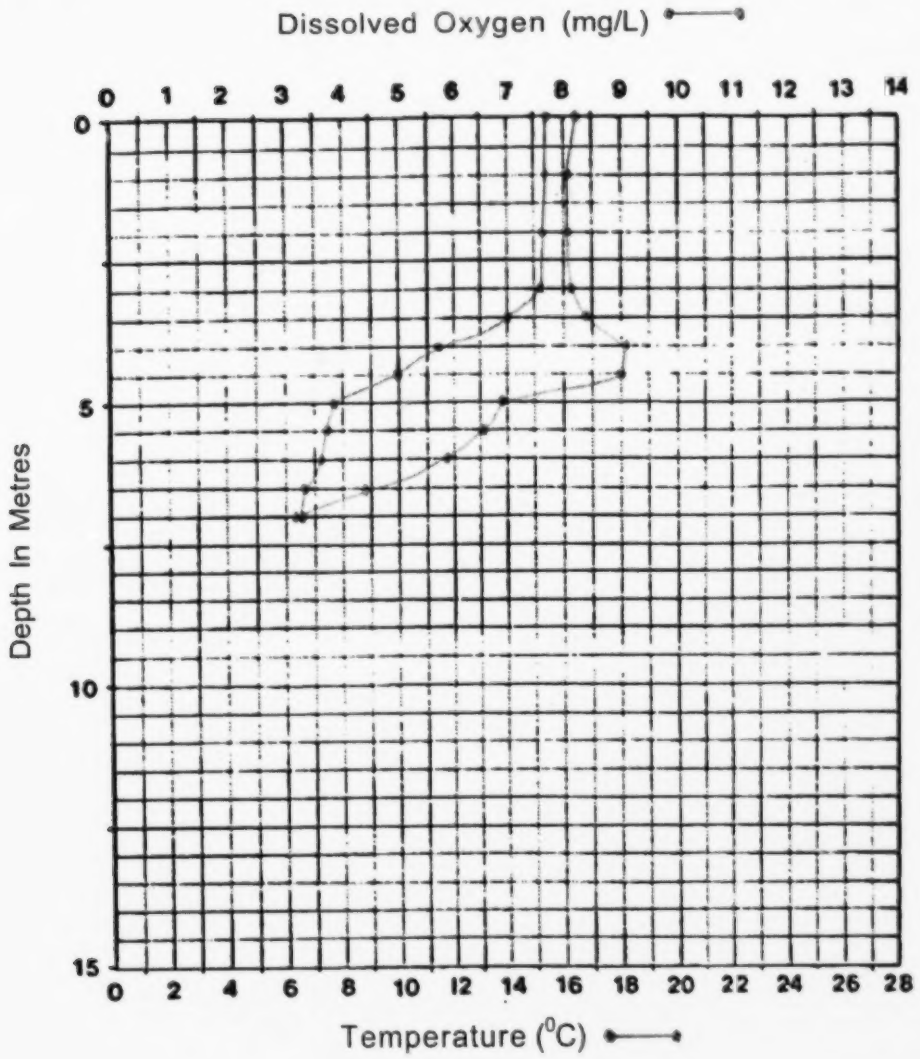
Note: Water sample too long in transit to guarantee the accuracy of pH (lab) results.

Lake: ROBINSON

OXYGEN/TEMPERATURE

Depth (m)	O2 (mg/l)	Temp (°C)
surface	8.3	15.4
1.0	8.1	15.4
2.0	8.1	15.3
3.0	8.2	15.2
3.5	8.4	14.0
4.0	9.1	11.4
4.5	9.0	10.0
5.0	6.9	7.8
5.5	6.6	7.5
6.0	5.8	7.2
6.5	4.4	6.8
7.0	3.2	6.6
7.5	Bottom	

DISSOLVED OXYGEN AND TEMPERATURE PROFILE



Lake: **ROBINSON**

NETTING RECORD

Mesh sizes experimental order: 25,76,51,89,38,64 mm.

NETTING SITE #1

Type:	Sinking Monofilament		
Date Set:	June 18, 1989	Time:	1000 hrs
Date lifted:	June 18, 1989	Time:	1400 hrs
Net Dimensions:	Length: 91.4 m	Depth:	2.4 m
Shallow Mesh:	64 mm	Depth:	2.0m
		Substrate:	organic/inorganic mix
Deep Mesh:	25 mm	Depth:	5.5 m
		Substrate:	organic

Comments: 90% of the rainbow trout captured were in the 38 mm (1.5 inch) mesh.

Lake: **ROBINSON**

LAKE CATCH SUMMARY

SPECIES	NET SITE NO. 1	2	3	4	ANGLED	OTHER	TOTAL	NUMBER SAMPLED	NUMBER PRESERVED	SIZE RANGE (cm)
Rainbow trout	42	-	-	-	--	--	42	42	--	11.6 - 25.5

Minnow Traps:

Bait: Sardines

#	HOURS	DEPTH(m)	SUBSTRATE	SPECIES	SIZE RANGE (cm)
1	4.5	1.0	organic	24 lake chub	7.9 - 12.0
2	3.3	1.0	organic	2 rainbow, 1 lake chub	16.0 and 17.0, 8.5

Lake: ROBINSON

INDIVIDUAL FISH DATA

Date Captured: June 18, 1989

Method of Capture: Sinking monofilament gillnet

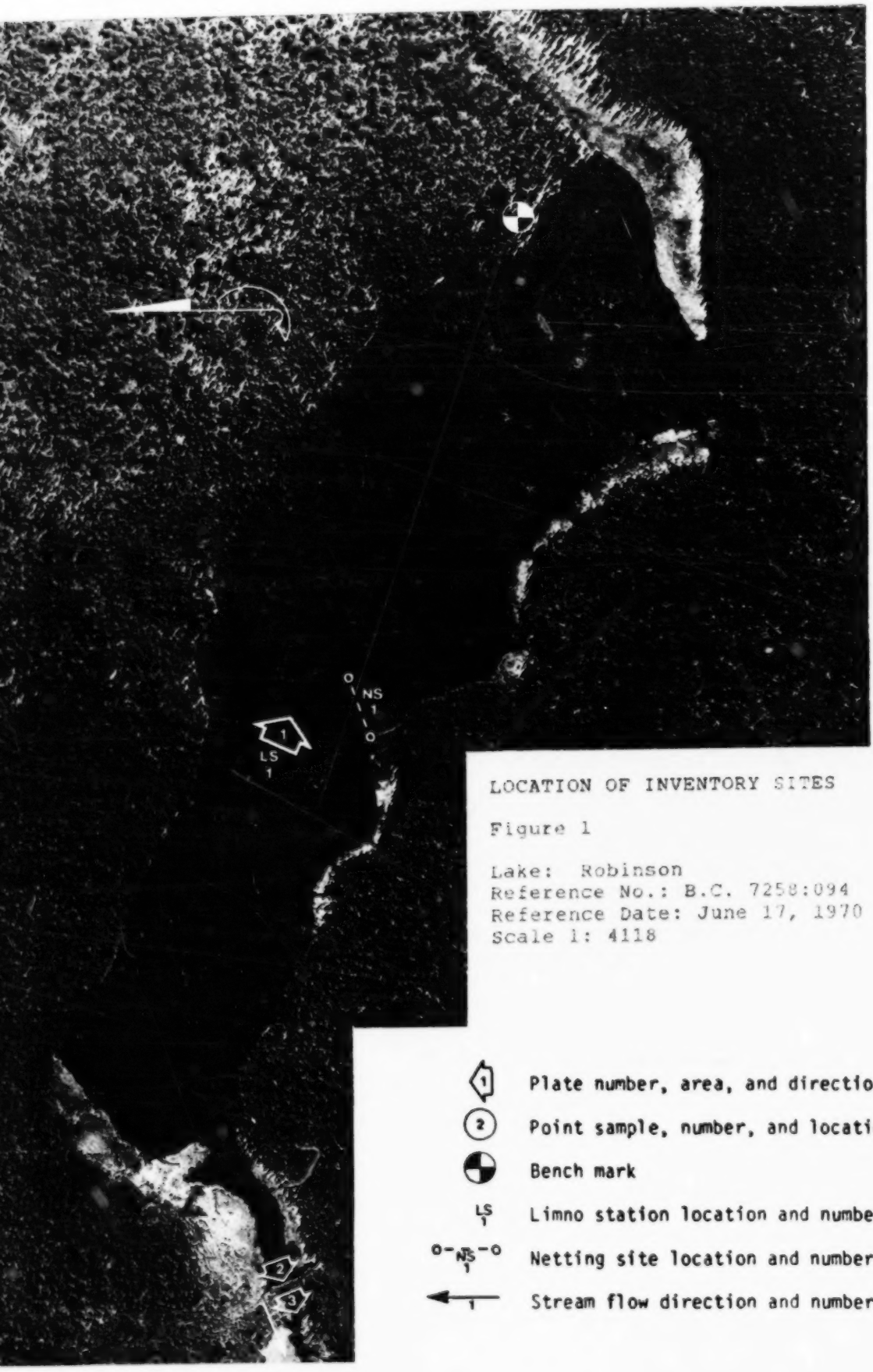
M -Male
F -Female
? -Not Obvious

IMM - Immature
MG -Maturing
MT -Mature
GV -Gravid
SP -Spent
? -Not Obvious

EG -Egg
FR -FinRay
HD -Head
ML -Milt
OT -Otolith

SC -Scale
ST -Stomach
TG - Fish Tag
WF -Whole Fish

Species	Fork Length (cm)	Weight (g)	Sex	Gonadal maturity	Sample Type	Age (yr)	Stomach Contents: Plankton	Insects	Fish	Other	Comments
Rainbow	11.6	110?	F	MG	SC	3+					Tapeworm nodules; stomach empty
Rainbow	11.7	115?	F	MG	SC	3+	Gammarus	chironomids			Tapeworm nodules
Rainbow	17.0	50	F	IMM	SC	2+	Gammarus				
Rainbow	18.5	70	M	IMM	SC		Plankton			snails	Tapeworm cysts
Rainbow	18.6	80	F	MG	SC		Gammarus	chironomids			Tapeworm cysts
Rainbow	19.1	80	F	MG	SC		Gammarus				
Rainbow	19.1	70	F	IMM	SC		Plankton	Chironomids			
Rainbow	19.2	70	F	MG	SC		Gammarus				
Rainbow	19.6	80	M	IMM	SC	2+	Gammarus	Chironomids			
Rainbow	20.0	80	F	MG	SC	2+	Gammarus				
Rainbow	20.1	90	M	MG	SC	2+	Gammarus			snails	
Rainbow	20.3	90	F	MG	SC		Plankton				
Rainbow	20.5	70	F	MG	SC	2+	Gammarus	Chironomids beetle			Fish has spawned?
Rainbow	20.6	90	F	MG	SC	2+	Zooplankton	Chironomids			
Rainbow	21.0	90	M	GV	SC	2+		Chironomids spider			dark colouration; spawnbound
Rainbow	21.0	100	F	MG	SC	2+		chironomids blackflies			
Rainbow	21.1	105	F	MG	SC	2+	Gammarus	chironomids		clam	Tapeworm cysts
Rainbow	21.6	120	M	MG	SC		Gammarus/ Plankton				
Rainbow	22.0	120	F	MG	SC		Plankton	chironomids			
Rainbow	22.1	125	F	MG	SC		Gammarus	chironomids			
Rainbow	22.3	100	F	MG	SC	2+	Plankton				tapeworm cysts
Rainbow	22.8	140	F	MG	SC	3+		chironomids			tapeworm cysts
Rainbow	22.9	120	F	MG	SC	2+		chironomids spider		snails	
Rainbow	23.0	135	F	MG	SC	2+	Gammarus				
Rainbow	23.1	130	F	MG	SC		Plankton				
Rainbow	23.1	120	F	MG	SC	3+	Gammarus				
Rainbow	24.0	150	F	MG	SC	3+	Gammarus				
Rainbow	24.5	150	M	MG	SC	3+	Gammarus				
Rainbow	24.8	150	F	MG	SC		Gammarus			snails	tapeworms
Rainbow	25.5	180	M	MG	SC	3+	Gammarus Plankton				tapeworm cysts
LENGTH AND WEIGHT DATA ONLY ON THE FOLLOWING:											
Rainbow	17.9	60									
Rainbow	18.0	70									
Rainbow	19.0	70									
Rainbow	19.3	80									
Rainbow	19.4	80									
Rainbow	19.4	80									
Rainbow	19.5	90									
Rainbow	19.9	85									
Rainbow	21.4	110									
Rainbow	23.1	130									
Rainbow	23.5	145									
Rainbow	25.7	140									



LOCATION OF INVENTORY SITES

Figure 1

Lake: Robinson
Reference No.: B.C. 7258:094
Reference Date: June 17, 1970
Scale 1: 4118

1 Plate number, area, and direction

2 Point sample, number, and location

Bench mark

LS 1 Limno station location and number

O-NS 1-O Netting site location and number

1 Stream flow direction and number

Plate 1: Panoramic view of shoreline looking southeast from limno station.

Plate 2: View of beaver dam blocking the outlet at the west end of lake.

Plate 3: View downstream from beaver dam on outlet. No salmonid spawning habitat is present immediately downstream of the lake.

Lake: **ROBINSON**

PHOTOGRAPH DIRECTORY

Negative #	Plate #	Description
R3: 12A, 13A,, 14A	1	Panoramic view of shoreline looking southeast from limno station.
R3: 3A	2	View of beaver dam blocking the outlet at the west end of lake.
R3: 4A	3	View downstream from beaver dam on outlet. No salmonoid spawning habitat is present.
R10: 16	4	View downstream from 3000 Road bridge crossing Robinson C., approximately 4.0 km downstream of lake. (Plate not indicated on airphoto).
R10: 15	5	View upstream from 3000 Road bridge crossing Robinson C., approximately 4.0 km downstream of lake. (Plate not indicated on airphoto).

ROBINSON LAKE

Plate 4: View downstream from 3000 Road bridge crossing Robinson Creek, approximately 4 km downstream of lake (plate not indicated on airphoto).

Plate 5: View upstream from 3000 Road bridge crossing Robinson Creek, approximately 4 km downstream of lake (plate not indicated on airphoto).

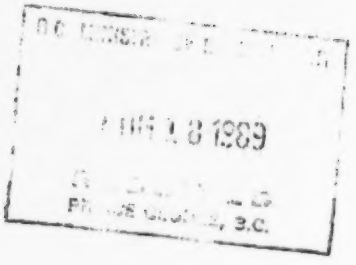
Lake: **ROBINSON**

Appendix A

LABORATORY REPORT

Water Chemistry Analysis

Recreational Fisheries
Habitat Management Branch
Northern Region
3rd Floor, 1011 4th Avenue
Prince George, BC V2L 3H9



[illegible] CHEMTECH ENVIRONMENTAL INC
[illegible] LABORATORY SERVICES
[illegible] Report for Fax # 03000316

[illegible] ATTN: DUANE JOSEPH Sample 89004323

[illegible] MOBILE PUBLISHING LAKE

From: [illegible] To: 89/06/16 18:0001
Dept: Acidw 0.0 0.0 Tide
Sample Grade: Fresh Water
Sample Comment:

Parameter Description	Result	Units	Analytical Technique (Barcode/Medium/Prep'n)
pH		pH units	Automated pH Meter (00004220/02/01)
Result 7.20 pH Units Analysis outside of optimal time frame			
Residue-Filterable		mg/L	Grav. 9 cm Buchner, 105C (00301070/02/01)
Specific Conductance	48	uS/cm	Cond Meter Sieburd (00111600/02/01)
Res. Filterable 1.0u	40	mg/L	Gravimetric 1.0u Filter (00071032/02/01)
Alkalinity-Total CaCO3		mg/L	Automated Electrometer (01021210/02/01)
Result 20.3 mg/L Analysis outside of optimal time frame.			

ZYMAN ENVIRONMENTAL INC.
B.C. LABORATORY SERVICES

Sample 59004324

Parameter Description	Result	Units	Analytical Technique (Sparkcee/Medium/Pres/n)
pH		pH Units	Automated pH Meter (03041220/02/01)
Residue, Nonfilt.		mg/L	Dried @ 104 on Buchner, 105C (00061070/02/01)
Specific Conductance	43	uS/cm	Cond Meter Diabold (00111160/02/01)
Alkalinity Total		mg/L	Automated Electrometer (01021210/02/01)

Lake: **ROBINSON**

Appendix B

TRIBUTARY STREAM DATA

Lake: **ROBINSON**

System Name: Robinson C. outlet

System No.: 25-0400-060-100

Site location: Sample Site #1, just upstream of 3000 Road bridge crossing Robinson C., approximately 4 km downstream of Robinson Lake. Location not indicated on air photo.

Channel Width:	3.5 m	Water Temp.:	14°C
Wetted Width:	3.5 m	Stage (flow):	moderate
Max. Depth:	4.0 cm	Velocity:	O m/sec
Avg. Depth:	35 cm	Slope:	0%
Turbidity:	40 cm	Colour:	tannic

Bed Material: Compaction: low

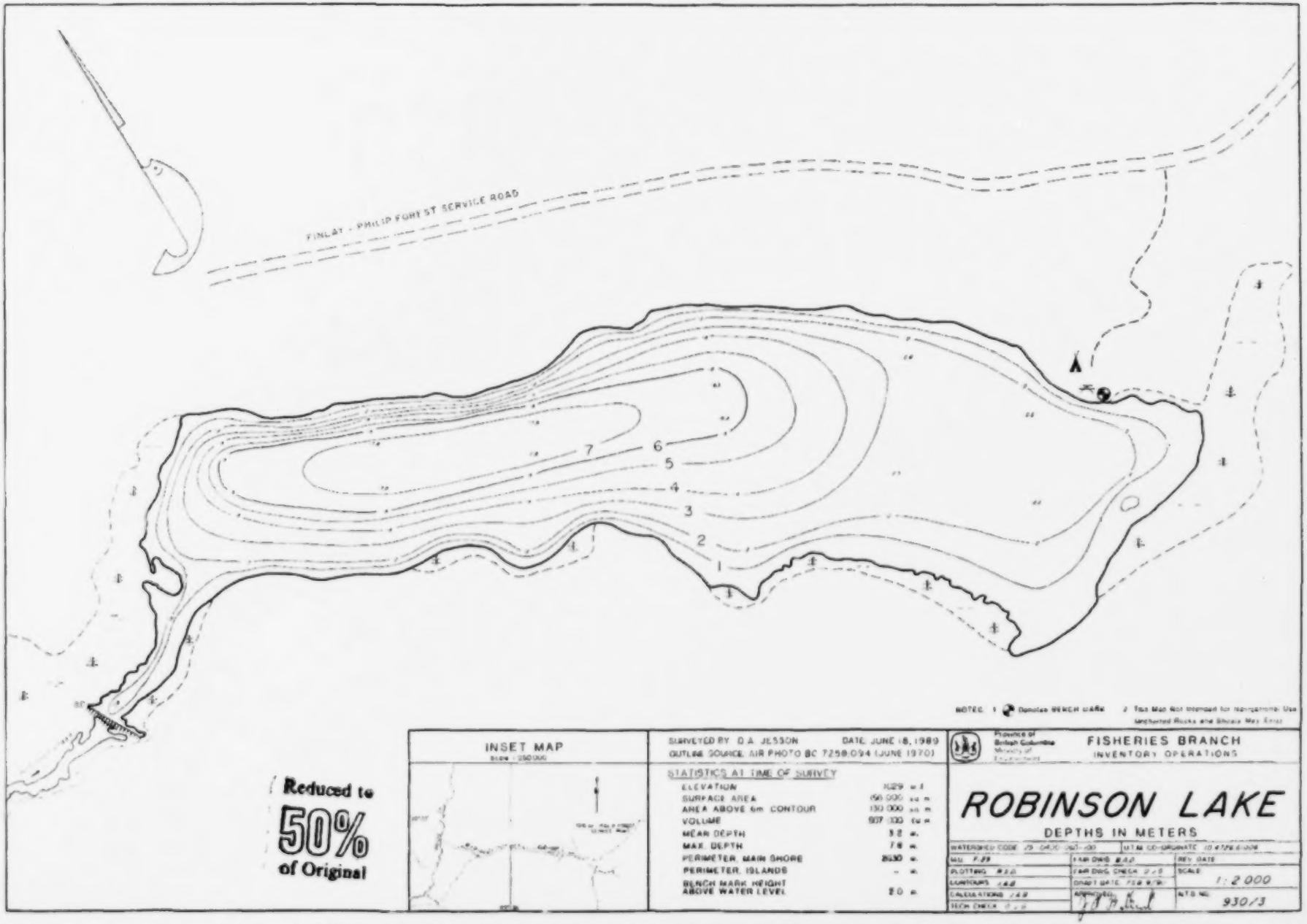
fines:	25%	
gravels:	70%	15% large gravel and 55% small gravel
larges:	5%	cobble
bedrock:	-%	

Banks (form, height, stability):

Right bank: steep/35 cm/moderately stable with roots and grasses.
Left bank: steep/35 cm/moderately stable with roots, grass and moss

Comments:

- Bank material largely organic.
- Left bank undercut upstream of sample location.
- Rearing good due to undercut banks and some stable L.O.D.
- Spawning poor at site due to high percentage of fines and no (or very little) flow. Site is virtually a pool.
- Some water moss present.
- Aquatic grasses provide some instream cover.
- Stream overhang cover is approximately 10 percent.
- One rainbow trout fry observed at site.



NOTES: 1. Denotes BENCH MARK. 2. This Map Not Intended for Navigational Use. Uncharted Rocks and Shoals May Exist.

Reduced to 50% of Original

INSET MAP

SURVEYED BY: D.A. JESSON DATE: JUNE 18, 1989
OUTLINE SOURCE: AIR PHOTO BC 7258:094 (JUNE 1970)

STATISTICS AT TIME OF SURVEY

ELEVATION	1629	m.a.s.l.
SURFACE AREA	156 000	sq. m.
AREA ABOVE 6m CONTOUR	130 000	sq. m.
VOLUME	807 000	cu. m.
MEAN DEPTH	5.2	m.
MAX. DEPTH	7.6	m.
PERIMETER, MAIN SHORE	2630	m.
PERIMETER, ISLANDS	-	m.
BENCH MARK HEIGHT ABOVE WATER LEVEL	2.0	m.

Province of British Columbia, Ministry of Environment

FISHERIES BRANCH
INVENTORY OPERATIONS

ROBINSON LAKE

DEPTHS IN METERS

WATERSHED CODE 75 040 000-00		UTM CO-ORDINATE 10 478 6 006	
MU 7.09	FAIR DWG R.A.D.		REV. DATE
PLOTTING R.A.D.	FAIR DWG CHECK D.J.S.		SCALE 1:2 000
CONTOURS I.A.D.	DRAFT DATE FEB 9/90		
CALCULATIONS I.A.D.	APPROVED		NTS NO. 930/3
TECH CHECK D.J.S.			